

REMARKS

Applicant hereby submits this Response and Amendment to the Office Action mail dated January 25, 2010.

Applicant submits herewith a Petition and fee in the amount of \$65.00, for a one-month extension of time pursuant to 37 C.F.R. § 1.1.36, to extend this Response due date one month from April 25, 2010 to May 25, 2010.

Claims 1 - 24 have been examined. Applicant have herein amended claims 1, 3, 4, 6, 7, 12, 13, 14, 16, 17, 19, 21, 23 and 24, without prejudice or disclaimer, to more clearly claim the invention of the subject application. Further, Applicant makes the amendments herein so as to facilitate are quicker allowance and issuance of the present patent application.

Applicant thanks the Examiner for reconsidering his earlier decision to restrict various claims and examine all of claims 1-24 based on Applicant's amendments of claims 14, 15, and 17 – 20 in the November 17, 2008 Response and Amendment, the Response filed on August 10, 2009, and the personal interview conducted with the undersigned on August 4, 2009. Applicant also thanks the Examiner for agreeing that the Akazaki et al. reference fails to disclose or teach the use of a switching oxygen sensor and that this and other arguments are persuasive, and that the previously pending rejection based on those references is withdrawn.

Applicant thanks the Examiner for once again meeting with the undersigned for an in-person Examiner Interview to discuss the present patent application and outstanding Office Action. A copy of the Examiner Interview Summary is included herewith. The Examiner and the undersigned discussed that the Examiner had used a representative claim similar in limitations to pending independent claims 14 and 17, but that some of the various limitations of

these claims were not shown in the references. Further, the undersigned pointed out that some of the independent claims have limitation not found in the representative claim used by the Examiner to reject all the independent claims. However, given the number of independent claims in the present patent application, the undersigned decided to focus on the representative claim crafted by the Examiner and the most closely related independent claims' limitations. As such, during the Examiner Interview the undersigned pointed out that he could not find where in Maki et al. (USPN 5,606,959) or Bush et al. (USPN 5,842,340) there was any disclosure, teaching or suggestion for the limitations of claims 14 and 17 in the whereby clauses, and particularly that were directed toward the method(s) used to (1) minimize perceived changes in engine smoothness caused by step changes in engine cylinders' torque levels and (2) cycling of gases' air-fuel about a defined control point is used to determine dynamic catalyst oxygen storage characteristics during non-stoichiometric conditions for modifying subsequent fuel changes into the individual cylinders for more quickly reaching the defined control point. The undersigned pointed out that the Examiner had failed to discuss or address the first of these two groups of limitations at all and he had failed to show where particularly the second was group of limitations could be found in the references. After some discussion and consideration of the disclosures in the Maki et al. and Bush et al. references, the Examiner agreed that he agreed, that the Applicants arguments were persuasive, and that claims 14 and 17 were allowable as previously presented. Applicant thanks the Examiner for his agreement that claims 14 and 17 were allowable based on these two sets of limitations not being disclosed, taught, or suggested by either the Maki et al. or Bush et al. references, or the two in combination. The Examiner and the undersigned also agreed that all of the claims would be allowable if these groups of limitation were added to all

the independent claims. The Applicant thanks the Examiner for coming to this agreement regarding the allowance of the limitations of claims 14 and 17, and willingness to place this application in condition for allowance by adding the distinct limitation to the other independent claims.

However, upon reconsideration and consultation between the Applicant and the undersigned after the Examiner Interview, the Applicant has decided to submit some alternative amendments to all of the independent claims (including claims 14 and 17 so as to not cause any concern regarding multiple inventions or possible restrictions) that would be preferable because of their association to the invention overall and that in conjunction with the other limitations are not found in any of the references that the Examiner has applied to the claims of the present patent application or those references that the Applicant is aware of. As such, Applicant has amended all the pending independent claims herein to include elements directed to providing at least one temperature sensor in said catalyst and monitoring the catalyst temperature with the at least one temperature sensor for determining engine cylinder fuel control. Therefore, based upon at least these added elements and limitations to all of the independent claims, Applicant respectfully submits that the pending claims are now in condition for allowance.

The Examiner rejected claims 1 - 24 under 35 USC 103(a) as being unpatentable over Maki et al. (USPN 5,606,959) in view of Bush et al. (USPN 5,842,340). This rejection is respectfully traversed. Reconsideration is respectfully requested. As noted above, Applicant has amend claims 1, 3, 4, 6, 7, 12, 13, 14, 16, 17, 19, 21, 23 and 24, without prejudice or disclaimer, to more clearly claim the invention of the subject application and to facilitate a more timely allowance of the present patent application. Applicant reserves the right to pursue the

prior pending claims in any continuation filed subsequently. For the following reasons, Applicant respectfully submits that Maki et al. in view of Bush et al. does not render obvious claims 1 - 24 for at least the reasons that neither Maki et al., Bush et al., nor the two in combination, disclose, teach, or suggest each and every element and/or limitations of each and every claim.

As noted above, Applicant has now added the elements and limitations related to providing a temperature sensor in the catalyst and monitoring the catalyst temperature and determining engine cylinder fuel control. Among other things, Maki et al. fails to disclose, teach or suggest a method of individual cylinder fuel control that includes providing at least one temperature sensor in the catalyst and in which monitoring the catalyst temperature with the at least one temperature sensor for determining engine cylinder fuel control is performed. In fact, Maki et al. does not disclose, teach or suggest providing a temperature sensor in the catalyst. As such, Maki et al. does not and can not disclose, teach, or suggest monitoring the catalyst temperature or determining engine cylinder fuel control using the catalyst temperature. Bush et al. fails to make up the deficiencies of Maki et al. in this respect. Bush et al., like Maki et al, fails to disclose, teach or suggest providing a temperature sensor in the catalyst. As such, Bush et al. also does not and can not disclose, teach, or suggest monitoring the catalyst temperature or determining engine cylinder fuel control using the catalyst temperature.

Further, Applicant notes that there are other elements and/or limitations stated in the independent claims that are not disclosed, taught, or suggested in either Maki et al. or Bush et. al. For example, in claim 3 the last three elements recite “controlling a minimum change in fuel quantity into at least one of the selected individual cylinders with said contrary sensor conditions,

using said fuel quantity sufficient to produce a change in the oxygen sensor condition thus differing from the selected individual cylinder's exhaust gases' conditions sampled in the second time period, during a third time period; determining the minimum change in fuel quantity causing a change in the oxygen sensor condition for each selected individual cylinder having said contrary sensor conditions follow the third time period and storing in memory such minimums for each respective individual cylinder during stoichiometric conditions; and establishing a learned average fuel quantity offset for each individual cylinder by adjusting all cylinders' offsets such that the minimum said fuel control change necessary for each selected engine operational condition are stored in memory. The Examiner has failed to discuss any of these elements and their limitations in his rejection. Further, as another example of the deficiencies in the rejections, in claim 4 the last two elements recite "monitor a time period, from a selected reference point, for the time of the first change in said exhaust gases' air-fuel conditions that are caused by said changes in fuel quantity during said second time period; and storing in memory the monitored time period from the selected reference point." These elements and their limitations are also not discussed by the Examiner in the Office Action. However, rather than expand on all the differences between the claimed invention recited in the independent claims and the Maki et al. and/or Bush et. al. references, Applicant has decided to rely primarily on the newly added elements and limitations for patentability of all the independent claims, so as to facilitate a more expedient allowance of all of the pending claims of the present application at the same time.

Further, with respect to independent claims 14 and 17, as noted above, these claims are also patentable over Maki et al. and Bush et. al., or both in combination, because neither Maki et

al. or Bush et. al., nor the two in combination disclose, teach or suggest a method of fuel control including whereby the change in fuel quantity is implemented gradually by transitioning to the maximum controlled fuel quantity changes amongst individual cylinders spanning over a number of cylinder firing events in order to minimize perceived changes in engine smoothness caused by step changes in engine cylinders' torque levels, and whereby said causing cycling of gases' air-fuel about a defined control point is used to determine dynamic catalyst oxygen storage characteristics during non-stoichiometric conditions for modifying subsequent fuel changes into the individual cylinders for more quickly reaching the defined control point. Applicant can not find anywhere in either Maki et al. and Bush et. al. where there is disclosure or teaching of using certain methods of fuel control to minimize perceived changes in engine smoothness caused by step changes in engine cylinder torque levels nor causing cycling of gases' air-fuel about a defined control point is used to determine dynamic catalyst oxygen storage characteristics during non-stoichiometric conditions for modifying subsequent fuel changes into the individual cylinders for more quickly reaching the defined control point. Therefore, claims 14 and 17 are further patent over Maki et al. and Bush et. al. based upon these additional elements and limitations.

With respect to the various dependent claims, claims 2, 5, 8 - 11, 15, 18, 20, and 22 Applicant similarly can not find support in either Maki et al. or Bush et al. to support the Examiner's bald statements of rejection. For example, with respect to the Examiner's rejection of claims 5, 8, 10, and 11, the Examiner fails to indicate where in either of the references support for his rejection may be found. Further, the Examiner also fails to state why one skilled in the art would combine Bush et al with Maki et al. in the manner necessary to achieve the invention

claimed in claims 2, 5, 8 - 11, 15, 18, 20, and 22. Applicant also notes that the limitations of dependent claim 8 is similar to the limitations identified in claims 14 and 17 related to minimizing perceived changes in engine smoothness caused by step changes in engine cylinders' torque levels, which the Examiner now agrees is not disclosed, taught, or suggested by either Maki et al. or Bush et al. With respect to the limitations of claim 2, Applicant can not find anywhere in Maki et al., and particularly not where the Examiner referenced at Figure 6 and the corresponding text of Maki et al. (or Bush et al. either) where there is any disclosure, teaching, or suggestion of determining an oxygen sensor time response characteristics for any purpose at all. All that is shown in Fig. 6 and 7, and the corresponding paragraphs at col. 7, lines 10 - 54, is the engine control unit and a brief description of its basic operation including the use of a switching oxygen sensor that switches from high to low based on rich or lean conditions. There is no disclosure of any assessment or adjustment being made for an oxygen sensor time response characteristics. With respect to the limitations of claim 15, Applicant can not find any indication that either Maki et al. and/or Bush et al. disclosing, teaching or suggestion the use of changes in fuel quantity are determined using stored correction values based upon oxygen sensor feedback during prior engine load changes of similar characteristics as stated in this claim. Therefore, if the Examiner decides to maintain any of his rejections of any of dependent claims 2, 2, 5, 8 - 11, 15, 18, 20, and 22 based on Maki et al. and Bush et al., Applicant respectfully requests that the Examiner identify where in Maki et al. or Bush et al., with particularity, on what aspects of these references the limitations of these claims may be found.

Once again, Applicant notes for that record that he does not address herein various other aspects of patentable differences between the present invention and the Maki et al. and Bush et

al. references' systems and methods because the ones enumerated herein have distinctions that are so clearly not disclosed, taught or suggested in these references. However, Applicant reserves the right to argue other distinctions at a later date if the Examiner does not withdraw his rejections of the claims and allow the claims presently pending and Applicant hereby reserves the right to note additional distinction as the Examiner may provide more detailed or different rejections in the future.

As a general matter, Applicant once again notes for the record that the Examiner has taken the elements and limitations of independent claims 14 and/or 17 (or some combination thereof) as being somehow indicative of all of the elements and limitations of independent claims. This approach of rejection is particularly traversed. The Applicant appreciates the time constraint that the Examiner is under with respect to the USPTO production goals. However, the Applicant cannot permit, and the law does not allow, wholesale rejection of multiple claims using reasoning directed to the specific elements and limitations of only a single claim, in this case similar to independent claims 14 and/or 17. As such, as a matter of fact, Applicant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness with respect to independent claims 1, 3, 4, 6, 7, 12, 13, 16, 19, 21, 23, and 24, because he has failed to explicitly show where each and every element and limitation of these claims, which differ from the elements and limitations of claims 14 and 17, exist in the Maki et al. and/or Bush et al. references. Even the discussion of each of the limitations of claims 14 and 17 are suspect as deficient.

Further, the Examiner has failed to provide a prima facie case of obviousness with respect to dependent claims 5, 8, 10 and 11, because the Examiner has simply recited the language of the

claims without indicating where in either of the Maki et al. and/or Bush et al. references any of the elements or limitations may be found. With respect to claim 11, the Examiner has not even listed or mentioned any of the language of this claim. Further, the Examiner fails to point to anywhere in Maki et al. and/or Bush et al. where there is support for his statement and rejection. Therefore, the Examiner has failed to make a prima facie case of obviousness with respect to this claim and the Examiner's rejection has been overcome. With respect to claim 8, again, the Examiner fails to point to anywhere in Maki et al. and/or Bush et al. where there is support for his statement and rejection. Therefore, the Examiner has failed to make a prima facie case of obviousness with respect to this claim and the Examiner's rejection has been overcome. With respect to claim 10, again, the Examiner fails to point to anywhere in Maki et al. and/or Bush et al. where there is support for his statement and rejection. Therefore, the Examiner has failed to make a prima facie case of obviousness with respect to this claim and the Examiner's rejection has been overcome.

Once again, the Examiner has failed to discuss various language of dependent claims at all, claims 2, 9, 18, 20, and 22, and therefore the Examiner has failed to make a prima facie case of obviousness with respect to these claims and the Examiner's rejection has been overcome.

Therefore, Applicant respectfully submits that the Examiner must address each element and limitations of these claims or withdraw his rejection of them. Applicant notes for the record that the Examiner's earlier Office Actions have been equally deficient. Given the pending rejections, Applicant must insist on a detailed explanation of the rejections by the Examiner, unless the Examiner agrees with the Applicant that the claims as present are now allowable.

Therefore, based on at least the aforementioned, Applicant respectfully submits that claims 1 - 24 are not rendered obvious by Maki et al. and/or Bush et al., or the two combined, because they lack disclosure of all the limitation of the claims and one skilled in the art would not reasonably combine these references in a manner necessary to achieve the claimed invention. As noted above, Applicant reserves the right to argue detailed aspects of the claim limitations if, and when, the Examiner is able to come up with support in either Maki et al. and/or Bush et al., or otherwise to address all the elements and limitations of each and every pending claim.

Based on the aforementioned, Applicant respectfully submits that claims 1-24 are in condition for allowance as patentable over the cited and applied references. Applicant respectfully request that claims 1-24 now be allowed and passed to issue as soon as possible. **If far any reason the Examiner disagrees, Applicant asks that the Examiner contact the undersigned to set a time for an Examiner Interview to quickly place the claims in condition for allowance. As duly noted by the Examiner during the Examiner Interview, this patent application has now been pending almost 7 years, its filing date is September 9, 2003.**

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to the charge card identified in a previously submitted credit card form.

If for any reason the Examiner believes that the present application is not now in condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below or on my mobile telephone at 703-731-7220.

Respectfully submitted,



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Date: May 25, 2010